IN THE CLAIMS:

Please cancel claims 48, 52, 79, 83 and 89 to 113 without prejudice. Please amend the claims and add new claims as indicated on the following listing of claims:

1.-30. (Cancelled)

31. (Currently Amended) A method of treating a mammalian subject having~~, or at risk of having~~ diabetes comprising transforming gut mucosal tissue endocrine cells, or gastrointestinal mucosal tissue endocrine cells, or gut mucosal tissue stem cells, pluripotent or multipotent progenitor cells, or gastrointestinal mucosal stem cells, pluripotent or multipotent progenitor cells in the subject with a polynucleotide comprising a glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter in operable linkage with a nucleic acid encoding insulin, wherein said transforming occurs *in vivo* via intra-cavity delivery to stomach or small intestine, thereby producing transformed mucosal cells, and wherein orally contacting said transformed ~~gut or gastrointestinal~~ mucosal tissue ~~endocrine~~ cells in the subject ~~transformed with a polynucleotide comprising a glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter in operable linkage with a nucleic acid encoding insulin,~~ with an amount of sugar, polypeptide, amino acid or fat ~~that~~ induces ~~production~~ transcription or secretion of the insulin by the transformed ~~gut or gastrointestinal~~ mucosal tissue ~~endocrine~~ cells in an amount effective to decrease blood glucose in the subject~~, wherein the endocrine cell transformation occurs *in vivo* via intra-cavity delivery~~.

32.-33. (Cancelled)

34. (Previously Presented) The method of claim 31, wherein the diabetes comprises type 1 diabetes.

35. (Previously Presented) The method of claim 31, wherein the subject has a fasting plasma glucose level greater than 110 mg/dl.

36. (Previously Presented) The method of claim 31, wherein the diabetes comprises insulin-independent (type 2) diabetes.

37. (Cancelled)

38. (Currently Amended) The method of claim 31, wherein the sugar, ~~polypeptide, amino acid or fat~~ increases ~~expression or~~ secretion of the insulin.

39. (Cancelled)

40. (Currently Amended) The method of claim [[38]] 31, wherein ~~secretion~~ transcription of the insulin is increased in the transformed ~~endocrine~~ cells.

41.42. (Cancelled)

43. (Previously Presented) The method of claim 31, wherein the glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter comprises a functional variant or a functional subsequence thereof, and wherein the glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter functional variant or subsequence retains all or a part of non-variant or full-length glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter expression function.

44.46. (Cancelled)

47. (Currently Amended) The method of claim 31, wherein the ~~gut or gastrointestinal tissue~~ mucosal tissue endocrine cell or mucosal tissue stem cell, pluripotent or multipotent progenitor cell is present in ~~a tissue or organ of the gastrointestinal tract of a subject~~ the small intestine.

48. (Cancel)

49. (Currently Amended) The method of claim [[47]] 31, wherein the ~~tissue is the gut~~ mucosal tissue endocrine cell or mucosal tissue stem cell, pluripotent or multipotent progenitor cell is present in the stomach.

50. (Cancelled)

51. (Previously Presented) The method of claim 31, wherein the mucosal tissue endocrine cell is a K-cell, L-cell, S-cell, G-cell, D-cell, I-cell, Mo-cell, GR cell or entero-endocrine cell.

52. (Cancelled)

53. (Cancelled)

54. (Previously Presented) The method of claim 31, wherein the glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter in operable linkage with a nucleic acid further comprises a vector.

55. (Previously Presented) The method of claim 54, wherein the vector comprises a viral vector.

56.70. (Cancelled)

71. (Currently Amended) A method of treating a mammalian subject having~~, or at risk of having~~ undesirable body mass or obesity comprising transforming gut mucosal tissue endocrine cells, or gastrointestinal mucosal tissue endocrine cells, or gut mucosal tissue stem cells, pluripotent or multipotent progenitor cells, or gastrointestinal mucosal stem cells, pluripotent or multipotent progenitor cells in the subject with a polynucleotide comprising a glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter in operable linkage with a nucleic acid encoding leptin, wherein said transforming occurs *in vivo* via intra-cavity delivery to stomach or small intestine, thereby producing transformed mucosal tissue cells, and wherein orally contacting said transformed ~~gut or gastrointestinal~~ mucosal tissue ~~endocrine~~ cells in the subject ~~transformed with a polynucleotide comprising a glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter in operable linkage with a nucleic acid encoding leptin,~~ with an amount of sugar, polypeptide, amino acid or fat ~~that~~ induces ~~production~~ transcription or secretion of the leptin ~~by the transformed gut or gastrointestinal mucosal tissue endocrine cells~~ in an amount effective to treat undesirable body mass or obesity in the subject~~, wherein the endocrine cell transformation occurs *in vivo* via intra-cavity delivery~~.

72. (Previously Presented) The method of claim 71, wherein the undesirable body mass or obesity is reduced.

73. (Currently Amended) The method of claim 71, wherein the sugar~~, polypeptide, amino acid or fat~~ increases ~~expression or~~ secretion of the leptin.

74.-75. (Cancelled)

76. (Previously Presented) The method of claim 71, wherein the glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter comprises a functional variant or functional subsequence thereof that retains all or a part of non-

variant or full-length glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter expression function.

77. (Cancelled)

78. (Currently Amended) The method of claim 71, wherein the ~~gut or gastrointestinal tissue~~ mucosal tissue endocrine cell or mucosal tissue stem cell, pluripotent or multipotent progenitor cell is present in ~~a tissue or organ of the gastrointestinal tract of a subject~~ the small intestine.

79. (Cancel)

80. (Currently Amended) The method of claim [[78]] 71, wherein the ~~tissue is the gut~~ mucosal tissue endocrine cell or mucosal tissue stem cell, pluripotent or multipotent progenitor cell is present in the stomach.

81. (Cancelled)

82. (Previously Presented) The method of claim 71, wherein the mucosal tissue endocrine cell is a K-cell, L-cell, S-cell, G-cell, D-cell, I-cell, Mo-cell, GR cell or entero-endocrine cell.

83. (Cancelled)

84. (Cancelled)

85. (Previously Presented) The method of claim 71, wherein the glucose-dependent insulinotropic polypeptide (GIP) promoter or chromogranin A promoter in operable linkage with a nucleic acid further comprises a vector.

86. (Previously Presented) The method of claim 85, wherein the vector comprises a viral vector.

87. (Currently Amended) The method of claim 31, wherein ~~the transformation~~ said transforming *in vivo* via intra-cavity delivery is with an endoscope, feeding tube, cannula, ~~intubation tube,~~ or catheter.

88. (Currently Amended) The method of claim 71, wherein ~~the transformation~~ said transforming *in vivo* via intra-cavity delivery is with an endoscope, feeding tube, cannula, ~~intubation tube,~~ or catheter.

89.-113. (Cancelled)

114. (New) The method of claim 31, wherein said transforming *in vivo* via intra-cavity delivery occurs orally.

115. (New) The method of claim 71, whercin said transforming *in vivo* via intra-cavity delivery occurs orally.

116. (New) The method of claim 31, wherein said sugar comprises glucose.

117. (New) The method of claim 71, wherein said sugar comprises glucose.

118. (New) The method of claim 54, wherein said vector comprises a vector that facilitates integration of the nucleic acid encoding insulin into the genome of said transformed mucosal tissue endocrine cells.

119. (New) The method of claim 71, wherein said vector comprises a vector that facilitates integration of the nucleic acid encoding leptin into the genome of said transformed mucosal tissue endocrine cells.

120. (New) The method of claim 71, wherein the subject exhibits a suppressed appetite, a decreased hunger, a decreased meal consumption or a stabilization of weight following said orally contacting.